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HOUSE OF COMMONS SESSION 2000–01

SCIENCE AND TECHNOLOGY COMMITTEE

THE SCIENCE AND INNOVATION WHITE PAPER AND THE SCIENCE BUDGET

MINUTES OF EVIDENCE

Wednesday 7 March 2001

The Rt Hon Stephen Byers MP, Secretary of State for Trade and Industry

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MINUTES OF EVIDENCE

TAKEN BEFORE THE SCIENCE AND TECHNOLOGY COMMITTEE

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WEDNESDAY 7 MARCH 2001

Members present:

Dr Michael Clark, in the Chair

Dr Ian Gibson
Dr Brian Iddon
Dr Ashok Kumar
Mr Ian Taylor
Dr Desmond Turner

Memorandum submitted by the Office of Science and Technology

1. INTRODUCTION

1.1 The Government is grateful for the opportunity to submit evidence to this Inquiry on two important developments which have taken place since its first memorandum was prepared: the publication of the White Paper "Excellence and Opportunity—a science and innovation policy for the 21st century" and the announcement of the allocation of the Science Budget for the period 2001–02 to 2003–04.

1.2 As the Government noted in its earlier memorandum,[1] the 1993 White Paper "Realising our Potential: A Strategy for Science, Engineering and Technology" was responsible for many of the mechanisms through which Government delivers its science policy and there are many encouraging signs that these mechanisms are working well. The Government believes, however, that further steps are necessary if the full potential of science is to be harnessed for the benefit of all. For that reason, "Excellence and Opportunity" and the anouncement of the Science Budget, following Spending Review 2000 (SR2000), introduced a comprehensive package of new measures to keep the UK in the vanguard of world science and will provide a solid foundation for building a dynamic knowledge economy.

1.3 Section 2 of this memorandum describes the way in which the range of commitments given in "Excellence and Opportunity" are being taken forward and Section 3 explains the basis for the recent allocation of the Science Budget. Section 4 comments on a number of specific issues relating to both "Excellence and Opportunity" and the Science Budget which the Committee has raised directly with the Office of Science and Technology. These include the purpose of "Excellence and Opportunity", and the process leading to the allocation of the Science Budget, including SR2000 and "the Cross Cutting Study of Science Research and Funding".

2. "EXCELLENCE AND OPPORTUNITY"

2.1 "Excellence and Opportunity" focuses on investment in scientific excellence, increasing opportunities for innovation and providing a basis for public trust in science, with 10 agendas for action:

1. Better Science in Schools.
2. Enhancing Scientific Excellence.
3. Acting on Foresight 2000.
4. People and Skills.
5. Universities in the Knowledge Driven Economy.
6. Innovation in Every Region.
7. Government Departments Encouraging Innovation.
8. Making the Most of Our Intellectual Property.
9. Linking in to Global Networks.
10. Creating Confidence.

2.2 In keeping with the open approach taken in developing the White Paper, the Government has published an Implementation Plan which explains how the commitments are being taken forward. The Plan is available on the OST website at http://www.dti.gov.uk/ost/whatsnew/. It provides a roadmap indicating the mechanisms, timescales and targets to which the people responsible for managing the delivery of each commitment are now working. The Plan shows the senior officials responsible for driving each agenda, as well as the details of the officials responsible for each commitment. Progress will be monitored and reviewed regularly by the Ministerial Science Group.

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[1] Memorandum submitted to the House of Commons Science and Technology Committee by the Office of Science and Technology in June 2000. Printed in HC466-iv, Session 1999–2000.

3. ALLOCATION OF THE SCIENCE BUDGET

3.1 As a result of SR2000, the Science Budget, administered by the Director General of the Research Councils in the Office of Science and Technology, will increase in cash terms by a total of £725 million over the three years 2001–02 to 2003–04 (the SR2000 period). In the final year, the Science Budget will be £2,155 million. These additions, taken together with an increase already planned between 2000–01 and 2001–02 mean that the Science Budget is set to grow by an average of 7 per cent per year in real terms over the next three years.

3.2 Details of the outcome of the SR2000 for the Science Budget and of the allocations of the budget among the Research Councils, the Royal Society and the Royal Academy of Engineering are set out in "The Science Budget 2001–02 to 2003–04", published by the Department of Trade and Industry on 22 November. (See the Office of Science and Technology website at www.dti.gov.uk).

Science Research

3.3 A total of £252 million has been added to the Science Budget over the SR2000 period for investment in three cross-Council programmes in key areas of science:

- *Genomics:* following the publication in the summer of 2000 of the draft human genome, in which the UK played a prominent part, the Government is investing a further £110 million to build on earlier investments, increase the level of research in the UK and so ensure that the UK can remain at the leading edge of this crucial area of science. Genomics research will lead to the development of new diagnostics, drugs and materials and will open up new perspectives across biology and the study of the natural environment.
- *E-science* increasingly involves science done through distributed global collaborations enabled by the Internet, using very large data collections, high-power computing resources and high performance visualisation. In some areas, the size and complexity of the data generated by scientific investigation is stretching present computing capabilities to the limit and it will not be long before this starts to act as a constraint on the pursuit of science itself. This is a global problem to which the UK needs to contribute if it is to obtain maximum benefit from the solutions that are needed. To address this, the Government is investing £98 million to tackle key computing problems across a range of scientific disciplines, with additional investment to develop core generic technologies. This investment is very important for large scale, modern science, and is also likely to have high-profile industrial implications over the coming decade as the next generation of e-science enables the next generation of e-commerce;
- *Basic technology*: the Government is investing £44 million in a multidisciplinary research programme which is designed to create fundamental new capabilities which will form the basis of the industries of the future. Likely areas of investment include nanotechnology, quantum computing, photonics and sensors.

Research Infrastructure

3.4 The new £1 billion Science Research Investment Fund (SRIF) will be invested in further renewing and developing of the infrastructure of the science and engineering base. SRIF is a partnership comprising the Government and the Wellcome Trust, with the Wellcome Trust contributing £225 million over the two years of the Fund. SRIF will build on the Joint Infrastructure Fund (JIF) which ends in 2001–02 and will have provided £750 million for science infrastructure, also a partnership with the Wellcome Trust. JIF has been run as a competition. SRIF will have four streams:

- £675 million for universities to fund new building, refurbishment and equipment from the DTI Science Budget (for the UK) and DfEE (via the Higher Education Funding Council for England) (for England only). Decisions on allocation will be made early in 2001 on a formula basis linked to research excellence and the volume of research undertaken;
- a £150 million fund provided by the Wellcome Trust for investment in buildings for sciences within the Wellcome Trust remit drawn from top-rated but unmet bids submitted to JIF;
- a separate £75 million of Wellcome Trust funding for biomedical science project related equipment/refurbishment, run on the basis of competitive bidding from universities; and
- £100 million to be retained by the Office of Science and Technology to modernise research council institutes and to contribute to large national projects.

3.5 The expectation is that universities should provide from own or third party resources funds for 25 per cent of the investment they undertake.

Knowledge transfer

3.6 The Government has announced a £140 million Higher Education Innovation Fund (HEIF) for England jointly funded from the Science Budget and by DfEE, through the Higher Education Funding Council for England (HEFCE), to build on universities' potential as drivers of growth in the knowledge economy. This will form a permanent third stream of funding for universities, incorporating the existing Higher Education Reach-Out to Business and the Community fund (HEROBC). In addition to HEIF, one further round of University Challenge (with £15 million available) and one further round of Science Enterprise Challenge (also with £15 million available) will be held. The Government is also making £10 million available next year to encourage the commercialisation of research carried out in the public sector. The details of how these various programmes are to be run will be announced in due course.

People

3.7 After three decades in which, on average, the PhD stipend has barely increased in real terms, the Government has signalled a decisive shift. Following increases in PhD student stipends announced in 1998, the Government has recently announced further increases of just under a quarter over the next three years. This will take the basic stipend from £6,800 this academic year to £9,000 in 2003–04. Separately, the Government has committed to provide, jointly with the Wolfson Foundation, some £4 million each year over five years to enable universities to recruit, reward, and develop researchers of outstanding achievement and potential. The scheme will be run by the Royal Society and awards made under it will be known as Wolfson-Royal Society Research Merit Awards.

4. ISSUES RAISED BY THE COMMITTEE

Issue 1—What the Department sees as the purpose of the "Excellence and Opportunity" White Paper and in what way it represents a progression from Realising Our Potential.

The White Paper "Excellence and Opportunity—a science and innovation policy for the 21st century" sets out the Government's strategy for science and innovation.

It outlines the actions that Government is taking, and intends to take, to build upon the UK's record of scientific excellence, and to translate the fruits of our scientific research and invention into products and services that will improve the economic and social well-being of all the people of the UK. There are three main areas of action:

— maintaining and enhancing the excellence of the science base;

— opening up opportunities for innovation; and

— ensuring that people have a confident relationship with science (so that it is seen as an opportunity and not a threat).

"Excellence and Opportunity" builds on what has already been achieved following the 1993 Science White Paper. It represents a significant development in several important respects including:

— funding for Higher Education Institutions (HEIs). The White Paper explicitly recognises that, while different higher education institutions have different missions which they should carry out in different ways, knowledge transfer is a core mission alongside teaching and research. As already noted in paragraph 3.6 of this memorandum, the Government is introducing a Higher Education Innovation Fund. This will build on the potential of universities and HE colleges as drivers of growth in the knowledge economy and will increase their capabilities to work with industry, particularly small firms;

— an explicit recognition that Government departments can play a role in encouraging innovation through the way they pursue their objectives, whether framing regulation, purchasing and delivering services, managing and controlling risks. The White Paper proposes measures to encourage this:

  — Government Departments with an interest in science are being asked to publish science and innovation strategies, drawing on Foresight, which focus on how they can maximise the potential of science and technology activities and how they can drive innovation. The strategies will cover arrangements for improving connections with relevant science and technology overseas, as well as arrangements for commercial exploitation of research, following recommendations from the Council for Science and Technology. And they will say how departments are encouraging innovation, through their approach to regulation, to procurement, and to the services they offer. The Ministerial Science Group, involving representatives of the devolved assemblies and supported by the Chief Scientific Adviser, will oversee the strategies;

  - a new programme, the new Small Business Research Initiative (SBRI), to encourage more high-tech small firms to start up, or to develop new research capacity, so stimulating innovation throughout the economy. This is inspired by the US Small Business Innovation Research Fund. Under SBRI, departments and Research Councils are opening up, to small firms, R&D procurement programmes worth up to £1 billion, with the target of procuring £50 million of research under these programmes from small firms. Each participating department will aim to procure at least 2.5 per cent of their relevant requirements from small firms. Research Councils will move to meet the target over time, drawing on new money;

- seeking to have public sector research establishments, as well as HEIs, embrace a more entrepreneurial role. They will be given an explicit knowledge transfer mission and the managerial responsibilities and freedoms to fulfil it. A culture of managed risk-taking is being promoted by, for example the publication of new guidelines on incentives for public sector research staff and the management of possible conflicts of interest. Financial support will be provided in the form of £10 million to commercialise research done in the public sector, including the National Health Service. A new source of advice will also be available from Partnerships UK, a new public-private partnership established to support the public sector in PPP transactions; and
- new Government guidelines will set out a clear presumption that departments should assign the IP arising from Government-funded research to research providers, which are generally better placed to undertake commercial exploitation of the results.

Issue 2—By what process were the allocations arrived at?

The Science Budget settlement reflected many of the main strands of a cross-Departmental review of science research funding (see "Cross Cutting Study of Science Research Funding—Analysis, Arguments and Proposals", at http://www.hm-treasury.gov.uk/sr2000/associated/science_231100.pdf which concentrated in particular on the Science Budget and DfEE's Higher Education research budget. Review members spent time visiting universities to see for themselves research work in progress and to hold discussions with vice-chancellors. The consultations with academics and with business, led by the Minister for Science and Innovation, Lord Sainsbury, also contributed to the review and the development of the White Paper.

In order to inform the cross-cutting review and to help in the process of identifying science research priorities, the Director-General of Research Councils (DGRC), undertook a series of consultative meetings with key players with an interest in the science and engineering base. These included the Research Councils, the higher education funding councils, the universities, medical charities which sponsor research. After the SR2000 outcome was announced by the Chancellor of the Exchequer in July 2000, DGRC began the process which led to the recommendation to the Secretary of State of how the new funds should be allocated among the Research Councils. This consisted of a further round of consultative meetings in the light of the settlement and, in particular, a series of meetings with all of the Research Council chief executives. The main objectives of these meetings were (i) to arrive at a suitable balance of funding for the three cross-Research Council programmes in genomics, e-science and basic technology and (ii) to identify those activities that individual councils should be giving priority to or moving away from.

Issue 3—What were the criteria by which the three priority areas were identified, and what are the objectives for these research areas?

In deciding the main science research priorities for the SR2000 period, the following questions were considered:

- What are the leading-edge scientific activities which have potential to add most value to the UK economy and make most impact on quality of life in the medium to long-term?
- Which areas of science research build on existing strengths of the UK science and engineering base and of UK industry and so would reinforce areas where the UK already enjoys a comparative advantage?
- Where does the UK need to collaborate internationlly in order to ensure that our scientists get access to leading-edge research projects and world-class facilities?

The objectives relating to the three cross-Council programmes are discussed above in section 3 of this memorandum. The objectives to which the Councils will each be working in respect of their own core programmes are set out in the Science Budget booklet on pages 17 to 30.

Issue 4—Where do the "Report on the North West Science Review" grants appear in the allocations?

The review of North West Science led by Dr Bruce Smith, which the Government accepted, recommended that £26.2 million should be invested in nine projects. All of these projects fall under one or other of the three cross-Council programme headings described above. As a result, the funding required will be found by the Research Councils from within the allocations made to these programmes.

Issue 5—What is the £68 million unallocated capital for?

As part of the £1 billion Science Research Investment Fund announced in July 2000, £100 million of capital was made available for investment in Research Council institutes and in large national science facilities. This money is intended to complement, in the Research Council sector, the investment which is taking place in analogous infrastructure in the universities through JIF and the remainder of SRIF.

The allocations to the Research Councils announced on 22 November 2000 included £32 million of this £100 million, leaving £68 million unallocated. The allocation of £32 million at that stage reflected the need to make some quick decisions on the highest priority investments to allow planning to be started so that timely commitments could be entered into by the Research Councils (see also next section). The allocation of the remainder of this capital is at present being considered in the context of the development of a longer-term plan for large national science facilities and of a review of Research Council infrastructure priorities, both of which are being led by Dr John Taylor, DGRC with the full involvement of the Research Councils. It is expected that the remaining capital will be allocated during the first quarter of 2001. This capital becomes available in 2002–03 and 2003–04.

Issue 6—How do the figures in table 3 in the Science Budget publication relate to the figures in table 2?

Table 2 shows the Science Budget (baseline plus allocations of SR2000 additions to the Science Budget) disaggregated by Councils and main activity. Table 3 sets out the Science Budget, HEFCE and Wellcome Trust contributions to the £1 billion Science Research Investment Fund (SRIF). The reference to the Science Research Infrastructure Fund in table 2 is a reference to the first of the four funding streams described in paragraph 3.4 above. It equates to the second line of figures in table 3.

The third line in table 3 (total £100 million) is made up of contributions from several lines in table 2. The main component is the £68 million shown in the line entitled "Capital (not yet allocated)". This is the same £68 million as described in the previous section. The remaining £32 million is not split out in table 2. It was allocated to the Medical Research Council (MRC), the Biotechnology and Biological Sciences Research Council (BBSRC) and the Natural Environment Research Council (NERC) and is included in these Councils' individual allocations tables on pages 17 (MRC—£12 million), (BBSRC—£10 million) and 21 (NERC—£10 million).

February 2001

Examination of Witness

THE RT HON STEPHEN BYERS, a Member of the House, Secretary of State for Trade and Industry, was examined.

Chairman

1. Secretary of State, welcome to the Science and Technology Select Committee. Thank you for finding time in your very busy diary to be with us. I know how difficult it was to find a mutually convenient date. We are delighted to have you here with us now. You have been before this Committee twice before. The first time you came to see us was to help us with our inquiry into innovation and the physical sciences; the second time you came to see us we tried to help you on the Synchrotron. I am sure we confused you rather than helped you; it was a very difficult decision for you to make at that time. Now we would like to talk to you in the context of a report we are doing, which we have entitled, "Are We Realising Our Potential?", going back to the report that was presented by the Minister, who is now Lord Waldegrave, entitled, "Realising Our Potential". We would also like to talk about science policy in general. I suppose at this time for Parliament it is also a little bit of a round up of what has happened in the last four years and what is likely to happen with science policy in the future. I wonder if I may just start by asking you how you have found your role in relation to science and technology and what it means to be the Cabinet Minister with the responsibility for science? Not only do you have the Chief Scientific Adviser, and OST, within your department but you do have a scientific responsibility across all government departments. How do you handle that? What impact has that had on science by having a co-ordinating Secretary of State or a minister?

(*Mr Byers*) Can I say, first of all, I welcome the opportunity of appearing before your Committee again. It is not many Secretaries of State for Trade and Industry in the recent past who have had the opportunity of appearing three times before your Committee—largely because they did not occupy the post for very long—but I am pleased to be in front of

[Chairman *Cont*]

you today. Can I say in relation to the Synchrotron, it was a very difficult decision but I did find both the giving of evidence and the advice from the Committee very helpful on what was a very difficult decision. First of all, it is very important for science in the United Kingdom that there is a Cabinet member with responsibility for science. I think that is very important because it does mean there is a voice at the Cabinet table on behalf of science and the science community. That is particularly important at times like the Comprehensive Spending Review, when the case has to be made for science. If there was not a Cabinet member with specific responsibility then I think the case could go by default. There is a very strong case to be made for science in the United Kingdom. I would like to think that the last two spending rounds have demonstrated that having science as the responsibility of the Secretary of State for Trade and Industry has actually worked in the interests of the sciences and the science community in terms of the funding which we have been able to achieve in the last two spending rounds. It has been a significant increase and it is partially due, at least, I think, to the fact that there is a Cabinet Minister with specific responsibility. In terms of the co-ordinating role across government, the Chief Scientific Adviser both advises myself and also has direct access to the Prime Minister. I think that is very important. Most members of the Committee will know that in 1995 when the decision was taken to move the Office of Science and Technology out of the Cabinet Office and into the Department of Trade and Industry there was an issue about it being downgraded potentially in some respects. I would like to think that the way in which we have been able to operate may have allayed some of the concerns that people had about the importance and the priority that we attach to science. As you know Lord Sainsbury is the Minister with day-to-day responsibility for science and innovation. I, as the Cabinet Member responsible for science, deal with the strategic overview of the direction in which science policy should be going. As you are aware from the White Papers that we have published, in particular, I am personally committed to supporting science, but also ensuring that we can use the excellence that we have in science here in the United Kingdom, perhaps, in a broader way than it has been used in the past. Making the links between academic research in science with commercial exploitation and development and innovation is very important. We have given a new impetus to developments in those particular areas. I hope I do not sound complacent, Chairman we have structures in place which I think are working well, and I think the results of that have been shown in the Budget outcome, which I think has been good for science and, hopefully, in the way in which the science community itself recognises that it is valued and has a very important part to play. There are at least a couple of announcements in the budget this afternoon which I think demonstrate, yet again, the importance that we attach to science.

2. I was going to ask you later on, but since you have opened up the subject I will ask you now. You refer to the important role that science plays in our society in general for the quality of life, wealth creation, and so on. You alluded to the fact that science can add to wealth creation, which is something that all governments should want for their population. Do you recognise, Secretary of State, that one should not just see science as a wealth creator, although it is pleasing that you do and if, as in so doing, we should not take our eye off fundamental research, which is the seed-corn for wealth creation at a later time?

(*Mr Byers*) I absolutely agree with that point. I think it would be a terrible mistake if we were simply to see science and, indeed, fund science in terms of applied science and science that can be exploited commercially. The reality is, as you have just said, that we only get to that stage if we have the grounding in pure science. I think the trick that we need to play really is to recognise that the two are not mutually exclusive but actually one complements the other. We have to have a strong science foundation in order to be able to have the opportunities to exploit the ideas that come out of that pure research, if you like.

3. It is almost a circle. Wealth creation finds the funds for research and development, and research and development provides the knowledge for wealth and creation.

(*Mr Byers*) That says it very well.

4. During the course of a week or a month do you get personally involved in discussing scientific matters or is that all left to the Chief Scientific Adviser and the Minister for Science? If you do get involved what sort of time do you spend—an hour a week or an hour a month?

(*Mr Byers*) Certainly more than an hour a week. I hate thinking along these terms because it makes me think how many hours a week I actually work—I am sure it would be the same for most Members. I have regular meetings with the Chief Scientific Adviser on a bilateral basis, he will brief me on issues that are relevant, probably every month we have a session together. There are many submissions that come up affecting science which, obviously, I consider along with Lord Sainsbury. It is difficult to put a time on it. When there is a big strategic decision like the Synchrotron there would be many hours in a week.

5. Let me put it another way: do you think that many weeks go by without you discussing a science matter at some time?

(*Mr Byers*) No, no.

6. OST is within your department, could an argument be made, do you think, for having OST as an independent office? If the argument could be made that way, what would the pros be for that argument and what would the cons be against it?

(*Mr Byers*) I am sure there are arguments that could be made to support a freestanding OST. I think what we have been able to achieve is that it has the support of a strong department, which is good in terms of cross-government discussions and debates about priorities, particularly spending priorities. It has meant that we have been able to make links between science innovation and the university sector. I think we have been able to achieve that without in any way downgrading the pure research that needs to go on as far as science is concerned. One of the things that I am particularly proud of is that, through the collaboration and the joint partnership with the

[**Chairman** *Cont*]

Wellcome Trust and the money we have been able to put through the Joint Infrastructure Fund, we have been able to put in about £1 billion in the last three years into basic infrastructure in our universities, which is not applied in any way, which is not exploited commercially but which is the foundation stone from which we are unable to put in other forms of funding to develop and exploit commercially. We have been able to do that because it has been part of the Department of Trade and Industry. I know there is a view that to have an area outside the department on its own means that greater priority and attention is given to it. I think there is also a danger that it can actually weaken in terms of the discussions and the debates around Whitehall, where to have a strong department can be useful. I think, Chairman, it is probably for others to judge whether being part of the Department of Trade and Industry since 1995 has been of benefit or a detriment. My own view, from my own experience now of two and a half years as Secretary of State, is that we have been able to add to what the OST has been able to achieve.

Mr Taylor

7. I am fascinated, because the language you have just used was the language I was using when I was Minister for justification. What, in your view, is the counter-argument about the Cabinet Office, from which my government moved the OST and, of course, earlier, the Department for Education and Science? Are you satisfied with your experience now that the DTI is a better repository of the OST than either of those other two departments?

(*Mr Byers*) I believe so. I am not someone who says that has to be a given. I think a lot of it depends on having a commitment to support science, and we have that. Wherever the OST is, there has to be a clear commitment to support science, otherwise it is going to be very vulnerable. What we have been able to achieve is making very important links within the DTI. With the very good working relationship we have with the Department for Education and Employment we are then able to bridge the link with the university sector as well. We have been able to ensure that the OST is not isolated and we have been able to support it and we have been able to make some very important links with other bodies. Having said that, I can understand there will be arguments that there is somewhere else within Whitehall where it would be better placed, I cannot, as we sit here this evening, think where that might be. I think the idea of having a freestanding OST would put it in a vulnerable position.

8. Would you agree that raising uncertainty about where the OST should be keeps opening up the problem of whether it is being taken seriously? I now reverse the question; would you make a determined, personal commitment that the OST is now well bedded down in the DTI and ought to stay there and gain strength from that department?

(*Mr Byers*) I would like to think that from the results people would recognise that it has been successful, that is the best way of judging it. If one looks back at what we have been able to achieve over the last three or four years or so, once it was bedded into the department—I understand you may know better than I do, there may have been teething troubles and difficulties, as there always is when there is a structural change in the Government—I would like to think, certainly in my time, in two and a half years we have been able to move forward and there have not been those difficulties. Certainly talking to the two Chief Scientific Advisers I have known they have been very supportive of where OST is and actually welcome the fact that they have regular meetings with myself and also have access to the Prime Minister if there is something which is particularly pressing.

Dr Kumar

9. Secretary of State, you have been a very strong advocate of a knowledge-driven economy, especially if we are to compete globally. I have heard you say many, many times this is a road we must go down. Do you think that as a country we spend enough on research and development compared to other countries in the world?

(*Mr Byers*) The figures are interesting, and it was one of the issues the Chancellor touched on in the Budget statement earlier today. I have looked at some figures in terms of R&D spend by the business sector. It is quite interesting to note that the United Kingdom business sector spends 1.2 per cent of GDP on R&D, where as the business sector in the Japan spends 2.2 per cent; in the United States 1.9 per cent; in Germany 1.6 per cent and in France 1.4 per cent. Certainly in terms of business spend on R&D we need to do more and we need to encourage that. The announcement we have had of the R&D tax credit being extended to larger companies and the consultation that will take place around that is going to be very good news. There is also the issue about R&D spend by government itself. I think through the Spending Review we have now got to a situation whereas there had been a decline we have now managed to stop that happening. In a number of major departments we will see government spending on R&D increase over the next three years. We have stabilised the position but there is clearly more that needs to be done.

10. Do you have an ideal figure or a percentage that you would like to tell us where you think our spending should be considered adequate or sufficient for R&D? I am trying to get a figure from you, if you have one in mind.

(*Mr Byers*) There is a danger of coming up with a precise percentage of GDP. We should not be trailing other industrialised countries, and the figures that I have just run through show that we are. I think if we could up the level to be closer to our major competitors, whether it is Japan, the United States, Germany or France that would make a significant difference. I would like to think—looking at the figures it is quite interesting, we have seen improvements in the R&D spend in the last two years. We need to encourage that. The tax credit that we have given to SMEs has been of help in doing that. If we can extend that to larger companies then that will make a very real difference. The thing that worries me is what we are seeing at the moment, because we are in global competition for R&D, is some major companies who traditionally have had a

[**Dr Kumar** *Cont*]

high level of R&D spend in the United Kingdom looking at other countries. Rolls-Royce is an example, they are considering moving some of their R&D from the West Midlands over to Canada, because the Canadian Government has a very attractive regime as far as R&D spend is concerned. We must be vigilant. We are in a global competition here and we have to make sure that we have the framework in place and the tax regime in place which is very supportive of R&D spend.

Dr Turner

11. Does the Prime Ministers's recent speech, promising a green industrial revolution in the United Kingdom—certainly press reports stated £100 million input—have any strong implications for government spend in R&D in areas of green technology?

(*Mr Byers*) Potentially it does. I think when we have a chance to look at the details of the Chancellor's speech today he indicated there that there would be support for R&D in green technologies. That is part of the consultation which has now begun as a result of the Budget statement. There is huge potential here. We have done a lot of work in the department now looking at new technology, and the green industrial revolution which the Prime Minister referred to yesterday. There is no doubt that if one looks at the overall spend globally on environmental technology it is worth in value about the same as the spend on pharmaceuticals worldwide. It is already a huge industry. We do not actually have much of it here in the United Kingdom but we do need to look at ways in which we can support it. The statement made by the Prime Minister yesterday and the announcement from the Chancellor today in the Budget potentially will have a big impact as far as R&D spend is concerned in this particular area.

12. You would wish to be proactive in that?

(*Mr Byers*) I think we are. We have been very positive from the Department of Trade and Industry's side with the OST and with the new Chief Scientific Adviser, who has great personal interest in this area. There will be many opportunities in the months and years ahead.

Dr Kumar

13. Secretary of State, in the last Spending Review there was an announcement of increases in the Science Budget, and that was very welcome by the community out there. Will you be seeking to strengthen the Government's investment in science engineering in the future and what level of funding do you have in mind for that?

(*Mr Byers*) I agree. The settlement we managed to achieve was one which was widely welcomed by the science community. It was a good settlement. Building on the first Spending Review we saw round about £1 billion extra going into science over three years. We have managed to secure a similar level of funding in partnership with the Wellcome Trust, so about £1 billion of new money for science over the next three years. It is a seven per cent increase in real terms for each of those three years, so there are significant improvements there. There is no doubt when the next Spending Review comes round, and they come round remarkably quickly, we need to be in a strong position to argue for further funding for science. We have to be able to demonstrate that—to be in a strong position, a point the Chairman made—we benefit enormously from spending on science. It is plainly one of our great strengths in the United Kingdom in the first place, because we are hugely strong so far as science is concerned. I was looking at some figures yesterday evening, one per cent of the world's population are in the United Kingdom; we fund 4.5 per cent of the world's science; we have 8.0 per cent of the world's published scientific papers; we have 9.0 per cent of citations and we have 10 per cent of internationally recognised science prizes. That is a position of strength. What we then need to do on the basis of that position of strength is to find ways in which we can, through funding, make sure that we secure that position and that we get the benefits from it in terms of wealth creation, and so on. There is then the potential to get the virtuous circle, which the Chairman referred to, having a strong Science Base, commercial exploitation, wealth being created, more money, which we can then use to underpin the Science Base further. What I am acutely aware of is when one goes to the Chancellor arguing for more money, being a very prudent Chancellor the first thing he says is: "What are we going to get for it and what are the results going to be?" This is one of those areas where, after the first three years Spending Review, we are beginning to be able to show good results coming through and I am confident that in a year or two years' time when the Secretary of state for Trade and Industry goes to the Chancellor for more funding he or she will have to be able to show the beneficial results of the funding that we have put in so far.

14. Picking you up on the effectiveness of the funding, do you actually show him specific examples, where you say: "This has been a successful idea, and this has been the outcome". Do you take real life examples? How do you decide that? How do you convince him?

(*Mr Byers*) With the Treasury we do have public service agreements, which are targets we have to achieve. In some specific programmes, like University Challenge, then there are requirements to try and get a number of companies spinning out from the universities. There are some specific requirements there as well. It is almost a contract, if you like, between the department, the OST and the Treasury.

15. How much of the pressure that you bring about on the Chancellor is your own belief in science and the advancement of science and the sciences budget, and how much of it, do you think, is pressure from the grass roots emerging from the scientific and technological community? I am just trying to assess whether if there was another Secretary of State they would passionately believe as strongly as you do, or whether it is the pressure from outside that is created for you to fight in the budget?

(*Mr Byers*) I am not a scientist by trade or profession but what I do know is how important science has been actually to our economy here in the United Kingdom, going back to the days of the Industrial Revolution, and it is going to be

[**Dr Kumar** *Cont*]

increasingly important as we move into this knowledge economy. Science has a huge role to play. I remember the first time I spoke at the Lord Mayor's Trade and Industry banquet in 1999 I identified four areas which were priorities for me as the Secretary of State, one of them was science and the importance of science, which I think surprised a number of people there. What struck me afterwards was the number of captains of industry who came up to me and said: "It was wonderful to hear a Secretary of State for Trade and Industry having science as one of his top four priorities". There is a case that has to be made. Essentially the position is that the science community, because they are in a position of strength, provide me with the bullets and it is for me to fire them to the best effect, and hopefully I am on target. That is a good relationship to have.

Mr Taylor

16. I am just passing a remark; it is quite interesting that William Waldegrave, now Lord Waldegrave, who was an excellent Science Minister, I was his PPS at the time before I then became the Minister, and he was quite a good Chief Secretary of the Treasury subsequently. I remember the spending round, where I was trying to remind him of his enthusiasm in science, I think you went the other way round. I will also put on record that no doubt this Government has achieved many of the things we failed to achieve before 1997, there are much better settlements for science and also the Treasury is much more proactive in supporting it, again today. Why is it in your references earlier to industry that industry itself, even if they like your speeches, do not necessarily follow through in devoting more money to the R&D? It is same sectors each year that are the jewels in the Crown. A lot of other industries are still lagging well behind the international competition in terms of the amount put aside for R&D, what is it that has failed to help us change the culture, despite all of the initiatives we have been taking for ten years?

(*Mr Byers*) I think it goes back to the short-term approach that too much of British industry still has. We see that across the piece as far as investment is concerned. Business investment is improving, but there are areas where we do not have businesses planning for the long-term. R&D is seen very much as a long-term investment; that is part of the problem. It is a cultural thing. It is also the fact that we place requirements in terms of company law on directors to deliver for their shareholders in the short-term. We have a financial regime—financial support—which is very often short-term. We have not had until recently a tax regime which offers incentives as far as R&D is concerned. If we begin to change the climate, if business has the confidence that we have economic stability, we have inflation below target, at target, and we have interest rates at their lowest level for many years then that should give them the security to be able to invest knowing they are not going to be suddenly hit by a big increase in inflation or interests rates going up dramatically. That could begin to change the climate or environment within which business takes those decisions and decisions about spending on R&D. If we can combine the economic stability with a tax regime which is supportive of R&D spend we may begin to improve the relative performance of industry in the United Kingdom.

17. As you said earlier, we are in a knowledge-based society but, again, industry does not seem necessarily to value those intangible assets—the ability internally to produce R&D. You are stimulating them. There was an announcement today which you may want to comment on later on intellectual property which I think is very welcome, R&D tax credits being for larger companies who work to help drug companies even more. It is the rest of industry, however, particularly certain areas of manufacturing industry, which is simply not doing this. Do you sense that these challenges that we set them—the University Challenge, the Foresight Challenge, the Faraday Partnerships—have penetrated sufficiently into those areas?

(*Mr Byers*) I think they have not, to be frank, and we need to do more. We can do more in a couple of ways, one of which is a specific announcement in the Budget today which I think most members will not have picked up on because it is buried deep in the Red Book and I will briefly refer to it, but firstly we need to simplify some of the initiatives that we have. There is a great danger that we, as Secretaries of State, have bright—or we think they are bright anyway—ideas and suddenly there is a new initiative, a new challenge launched and a new programme is announced. That can be confusing, particularly for people running businesses who say: "Well, you have a Faraday, you have a University Challenge, a Science Enterprise Challenge, what are all these balls up in the air?". We need to be more focused and I have been trying through the Higher Education Innovation Fund, to pull together some of these streams of funding to have a substantial amount of money which is going through the university sector, but with a requirement that universities look outward and—hopefully—engage the sorts of companies you have referred to. I think the idea of having almost a third stream of funding going into universities—not just for teaching and for research but for innovation—will be a very important development. We now have £140 million in the spending review going into that third stream of funding, part of which will be used to go out and advocate the importance of innovation, but secondly we do need almost to do an audit of what the requirements are as far as business is concerned, which is why we announced this afternoon as part of the Budget statement that Sir Gareth Roberts, who is Master of Wolfson College, Oxford, is going to lead an independent study into the supply of skilled scientists and engineers in the United Kingdom, and the aim of this will be to see whether there are adequate mechanisms in place both for businesses to identify their needs for scientific and technical skills and to communicate them back to the higher education sector and vice versa, and we have asked Sir Gareth to report by the end of February 2002. I think this is a very important piece of work; we are delighted that Sir Gareth has agreed to chair this independent study, and it will go some way towards identifying the sorts of problems you have just referred to.

Dr Turner

18. As you have already mentioned, the Budget has made several provisions today to try and encourage R&D and extend, in particular, tax credits to large industries as well as to SMEs. There is still, nonetheless, a certain amount of, I suppose, cynicism as to whether British industry—particularly the engineering sector—will respond because they have shown no great sign of responding to challenges in the past and I wonder whether it is necessary to consider any other fiscal devices to try and stimulate this, for example, setting a minimum level of R&D as a percentage of turnover in order to qualify for tax credits so if it is, say, less than 2—no tax credits; 2.1—they get 2.1 per cent's worth of tax credits; and other devices like that perhaps to kick start them into action. Have you considered that?

(*Mr Byers*) One of the reasons we are consulting about extending the R&D tax credit to larger companies is to look at precisely those sorts of variations that might be possible. There is an issue about whether it should just apply to additional spend over and above that which is presently being committed, or across the board; whether it should be incremental in the sense that you have just referred to. These are all going to be issues we will need to consult on because the devil is going to be in the detail and we need to have a package of R&D tax credits which will achieve its objective—namely, to stimulate further investment in R&D but also to encourage those companies—of which there are too many in the United Kingdom—who at the moment do not invest in R&D to provide incentives for them to commit resources for the first time. It is going to be our challenge to come up with a package that will achieve precisely that, and I think the idea that you have referred to is going to be one of those issues we will need to address in the consultation exercise.

19. It is a sad commentary that you have to think in these terms because if their culture was in favour of R&D, as it is in other countries, this would not be an issue?

(*Mr Byers*) I know, but we are where we are and it is always surprising to me how a little financial incentive suddenly changes people's attitudes towards these matters!

Dr Gibson

20. It was a bit like a hurricane in there this afternoon with billions and billions floating about and we noted intellectual property was mentioned. Would you say why you think that has to be addressed? What do you see is the problem and why in the Budget was that taken up as a fairly major issue this afternoon? What is the role of academia and how do they use intellectual property in the States? What are the lessons that the Government has picked up and addressed this afternoon in terms of intellectual property?

(*Mr Byers*) This is really at the heart of the knowledge economy; it is one of the building blocks. If we are encouraging people to invest and commit resources, then they have to know that the investment they are making is going to be secure. That means, when we look at intellectual property rights, people need to know that there will be legal protection for the investment they have made in the intellectual property they then have in a product or a mechanism. What we can do, and what we thought we should do, is look at how the tax system could be used to provide further incentives in that particular direction so it very much complements the R&D tax credits that we have just been talking about because it is targeted in a specific way, recognising that knowledge and the application of knowledge and the protection of that is going to be very important. If we can put in place a tax regime which, once again, provides support as far as developing intellectual property is concerned, then that will pay benefits in the medium and long term.

21. Do you think that academic life views intellectual property as just generating income for the library or sports centre or whatever and not as in America, where it is servicing the public and life outside the university? It tends to see it simply as an income generator?

(*Mr Byers*) I think you will probably know better than me about the way these things are seen in the academic community but I do think the point is well made that all too often in some of our universities the potential of exploiting ideas beyond the campus is not always identified and that is partly cultural because of the nature of our university sector. I do think it is changing, and has changed, quite dramatically over the last few years but there are still examples of where that is not the case and through the various initiatives we have launched, through the Science Enterprise Challenge, the University Challenge and now the Higher Education Innovation Fund, we are helping to build those bridges. Within that context, however, I think IPR is a very good example of people perhaps just seeing it for funding within the university and not seeing it having wider implications beyond that.

22. Could I carry on and ask you about careers? It is almost as if there is a general election pending with some of us going around campuses talking about science, and it really is wonderful because it is so positive in terms of what the Government has done, but one issue that keeps coming up time and time again is the career structure. Most of the science is done by young people and they feel they are under-valued. They are not avaricious, millionaire types, but they just feel there is no career structure, only one-year contracts and so on, and a lot of the young people become lawyers because there is more money there; they do not want to but they feel it is not a real career job now, and that is a big issue. Many people have identified this point and certainly I feel very sensitive when questioned about it. We will have to do better, do you not agree, in terms of our young people seeing it as a career and paying them accordingly?

(*Mr Byers*) I was pleased that we were able to announce in the Science and Innovation White Paper an increase in the PhD stipend going up to £9,000, and that is getting in at the right level. Clearly there is more that we might be able to do. I know David Blunkett, as Secretary of State for Education and Employment, is looking very closely at what he might do within the higher education sector to support research and fund research students. There is also a wider issue about the career structure—this

[**Dr Gibson** *Cont*]

issue about whether we have valued enough scientists and engineers in the UK. I think we all know that in some quarters it is seen as being not the first choice of many parents or, indeed, students and that will take time, but if we are investing, and we are now, if we promote science and take a good deal more pride in science than perhaps we have done and if we can celebrate the success we do have, then all well and good. This is why I think mapping the human genome has huge potential to engage people in what we are doing in the UK. Having talked to young people as well, there is a number of people who got engaged by science and engineering in the late 50s/early 60s because of space exploration—who knows? We discuss science an awful lot. If you look at what is happening, sometimes it is very controversial—whether it is GM, whether it is what is happening now with foot and mouth, BSE or the human genome—these are all areas where scientists are to the fore, and it may well be ironically that we will see a lot more interest from young people in science as a career because it is now commented on on a daily basis.

23. Are you aware that, within universities, you can have two or three tiers of post-graduate students in that Wellcome will always pay more?

(*Mr Byers*) I know, and will still pay more than our £9,000 stipend.

24. Yes, so they are driving it. Do you not think it is time to have discussions with them and get one uniform structure rather than have these charity bodies—Cancer Research Campaign and others—who pay more and give the department £5,000 or £6,000 for consumables. So you have two tiers of students which does lead to a lot of problems within the department.

(*Mr Byers*) I think we need to get to a situation where we are providing adequate rewards, yes.

Dr Turner: I do not think we can emphasise enough the importance of not just encouraging PhD students but the really productive period of the years after completing your PhD. Of course, most research fellows do not survive that; they go and do something else—get a teaching job or whatever. They are really the richest seam of talent—

Dr Gibson

25. They become MPs!

(*Mr Byers*) I was going to say, looking at the number of PhDs around this table—

Dr Turner

26. It used to be quite absurd; when I was in that position people used to say, "Well, when are you going to get a proper job?"

(*Mr Byers*) They say the same to me now!

27. I think it could be suggested that what would make a great contribution towards the quality and productivity of British science would be the establishment of career research posts in universities which are like lectureships but predominantly research-based, and this could be a joint enterprise between DfEE and DTI. I think it would go a long way towards raising the name of British science.

(*Mr Byers*) I think that is an interesting concept and we will have a good look at it.

Dr Kumar

28. Like Dr Turner, I was a research fellow for three years and another two years, which created a whole lot of uncertainty in trying to map out my life and career and caused a great deal of concern, because you want support to buy a house and so forth and, because you do not have a career structure, you will not get the support. Perhaps we could look at a big leap in this direction for post-graduate, post-doctorate fellows. Just as it has been demonstrated by a government that science is very important, those people who are going to make a future contribution to science, the small changes, though they are helpful, need a big shake-up, a big increase to demonstrate the Government's commitment, and that will send a very powerful signal to the scientific research community in our universities.

(*Mr Byers*) But would we do this with the business community as well in a joint way, or would this be solely government-funded?

Dr Kumar: I certainly think that the Government could play a very powerful role, sending a signal saying its commitment is strong to those fellows saying yes, government does care that they do not abandon their research after a few years and go on to something else. Some people finish up in the city and make lots of money—a wise move.

Dr Iddon

29. I suppose I had better declare an interest—from a reader in chemistry at university to MP brought an increase in salary of £10,000 in 1997 so that must speak something for the salaries of academics! Secretary of State, we have talked to a number of organisations privately as members of this Committee and recently have been talking to quite a few representatives of industry who have identified a drastic shortage of good quality, and I underline that, science teachers in schools. Recently we talked to the Chemical Industries Association, for example, who felt we ought to try and promote science teaching more in primary schools. Now, there is some very good science teaching going on in primary schools but not across the board unfortunately. Of course, science has moved from the DfEE through the Cabinet Office to your department, so what can the DTI do to promote good teaching? Do you think you can do anything to get industry more involved than they are at the moment—some are very much involved but not all industry is involved—and could you tell us something about your joint strategies with the DfEE.

(*Mr Byers*) We have been talking to the Department for Education and Employment about how we can raise the profile of science in schools generally. As a result of that there is going to be a Science Year in our schools which we will use as an opportunity to raise the profile of science. You will be aware, I think, that the Secretary of State for Education and Employment has put in place now a number of measures to attract scientists into teaching

[Dr Iddon *Cont*]

by providing them with a lump sum if they enter the teaching profession by ensuring that, in those shortage areas which very often are the science subjects, additional support is given. That is beginning to have an impact already and I think, if one looks at the applications for teacher-training posts in science subjects, what has been a decline over many years has now seen an upturn which I think is helpful; and if we do get trained scientists who are teaching in our schools, then they will be able to enthuse young people. Part of the difficulty we have at the moment—and these are figures that I have not seen recently but when I was Minister for Schools I saw them—is that we have a very large number of secondary school teachers teaching science who have no qualifications in science and I think those people would be in an almost impossible position to enthuse young people, but with science training they will be in a far stronger position. I think we need to recruit scientists to teach science. Measures are being put in place by David Blunkett to do that and I think that will help in terms of enthusing young people about the importance of science.

30. Also we have talked to the biotechnology industry which is a sexy area for scientists to work in, so it does not have a problem attracting good quality scientists, but what it does have trouble with is managing the industry. There is a great lack of skilled managerial entrepreneurs in this country to manage the industry—in other words, converting the ideas into products is the problem. I know your department is doing something about encouraging entrepreneurs to come to the United Kingdom or to become existent in the United Kingdom internally or from outside. What do you think we ought to do to overcome this problem that has been identified by the biotechnology industry?

(*Mr Byers*) In terms of the biotechnology industry there is a number of things we need to do—one is learn from the success of some other countries and if we look at the position in Bavaria in Germany, for example, they have seen a huge growth in the biotech sector because of the infrastructure they have put in place and because of the very beneficial tax regime which they have been able to establish through the Laender, rather than through the Federal Government, and there are lessons we can learn there. Also they have married together people who may not be scientists but who have entrepreneurial skills working alongside the scientists to develop the companies which are developing as far as the biotech sector is concerned. Whether it is the Government almost acting as a marriage broker bringing together people with enterprise skills and entrepreneurial skills with scientists so they can work together in a productive way, we have certainly been looking very closely at that. We have also been looking, as you mentioned, at the idea of encouraging people who could be elsewhere in the world but who have these skills to come to the United Kingdom and set up businesses here and looking at ways in which we can support a lot of financial incentives for that to happen. So there is a package we can pull together. It is not reinventing the wheel but there are good examples of what does work well elsewhere in the world, and we can develop a lot of that here in the United Kingdom.

Mr Taylor

31. I think you and I ought to be quite careful about saying that non scientists cannot enthuse people about science because you and I have both been trying to do that and we are not scientists, but you made a very important point about schools. Are you keeping a watch on the curriculum because there could be thought to be a tendency to go for the softer side of the science curriculum which is not what we want to see when making sure our best people get the right training and then go on. I remember talking to Lord Oxburgh at Imperial who has to spend virtually months now taking even double A maths 'A' level students and putting them through a learning course which used to be done in schools as part of the 'A' level. In a sense, therefore, our best universities are having to train 'A' level students even if they are, by the category of marks they get, the best students of all. I am worried about whether the curriculum is demanding and stretching enough.

(*Mr Byers*) Also I think the issue is the quality of 'A' levels as well. I know there is a lot of work that is going on to make sure they are not being devalued in terms of the expertise that a young person sitting those exams needs to achieve if they are going to be successful. It is true to say that, for understandable reasons, there has been a broadening of the curriculum and that may well lead to some of the problems you have identified but I am aware that David Blunkett certainly, as Secretary of State, who obviously has responsibility here, keeps the curriculum under review and would be the first person to take action if he felt in any way that it was getting softer or the curriculum was not being useful.

32. The point of my question is that I also think it is your interest—ie, that when we look for the top academic results in university and then on to research we obviously want to bring in people from schools. So it is on the one hand enthusing people about science who may not then become scientists, but at the same time making sure that those who are going to become scientists are stretched in schools and are prepared to go on to university and meet international standards.

(*Mr Byers*) I will certainly discuss that with David Blunkett. Having worked under David when I was Minister for Schools, we still talk about these issues as it happens so I will take it up with him.

Dr Gibson

33. The Council for Science and Technology is probably the top level advisory body in this country but it does have a very low profile. Could you tell the Committee if there is anything it has really contributed to the big scientific debates that you illustrated earlier—stem cells, GMOs and so on. Do they report to the Cabinet? Does the Prime Minister say: "What is the position of this Committee on this issue, or that?", or does it come from other angles?

(*Mr Byers*) No, it does not. I occasionally will go along and sit in on their deliberations and they have done some very excellent work and they do report directly to the Prime Minister. They are appointed by the Prime Minister and it is a classic dilemma really but I think they find they could get lots of easy

[**Dr Gibson** *Cont*]

publicity but not have much impact on government policy. I think the view they take is that they are more effective if their reports are going directly to the Prime Minister and myself without a great fanfare, allowing us then to consider the issues they have raised, which then informs the development of government policy. Looking here at the reports they have done recently, they have reported on science teachers developing the profession of science teaching in primary and secondary schools; the whole question of the exploitation of science and technology by United Kingdom business; and a review of the whole of science and technology activity across government departments—so they have been looking at those sorts of issues, and there are a number of other areas which they are looking at in some detail.

34. But as a political animal, do you think they do a good service by behaving in this subterranean way? They may do good reports but nobody sees them other than the Prime Minister. Would it be better if they had a bit of a wider presence in the scientific community? They are very eminent people.

(*Mr Byers*) I see the reports as well and I find them very helpful, and they do inform in the way in which they develop policy, and they do operate almost as a sounding board for the science community. Of course, there is the Chief Scientific Adviser who probably advises on the more contentious issues—whether it be BSE or GM—and, of course, the Chief Scientific Adviser is there on a daily basis and can give immediate advice.

35. He once told us he only reported to Peter Mandelson and not to the Prime Minister directly. Is there a direct link to the Prime Minister now on scientific matters as in the States where the adviser speaks directly to the President?

(*Mr Byers*) Yes.

Chairman

36. I think it might be best if we understood that as he said he only reported to the *Secretary of State*, just in case there is any misunderstanding on that particular point!

(*Mr Byers*) Yes. The Prime Minister has a great personal interest in science as well and enjoys the conversation and the discussions on science matters that he has with the Chief Scientific Adviser.

Dr Turner

37. What is your view of the impact of the Foresight programme?

(*Mr Byers*) I think it has huge potential, and I have tried to raise its profile slightly. We had a Foresight festival in December where we tried to get all the Foresight panel reports coming out at round about the same time in a ten-day period. The Foresight panels involve people who are very enthusiastic and some leading thinkers in their own areas. I have to say, we have given Foresight a lot more freedom in terms of the areas they can look at and I felt, looking at the reports in December, that they were rather variable in their quality. Some were quite good; others I did not rate very highly at all. That is why I have asked Lord Sainsbury to do a review of Foresight and the Chief Scientific Adviser is carrying that through on a day-to-day basis. Foresight can be a great force for good and we need to make sure we focus it. We are providing extra money now and there is £15 million going to develop some of the ideas coming out Foresight. We have to make sure that is money well spent. I think we can improve Foresight; there have been good initiatives coming out of it, but I think we can do better.

38. How do you see it in relation to other programmes, like the European Eureka programme and so on?

(*Mr Byers*) I think it is complementary but the great attraction of Foresight is it has a freedom and we have deliberately given people a freedom to think wild thoughts if that is the direction they want to go in. It is quite difficult because some of the ideas coming out of some of the Foresight panels are potentially quite embarrassing, and I was slightly worried that they seem to be government-approved because some of them I certainly would not want to sign up to on behalf of the Government, but I think they are regarded as independent bodies, which is good.

Dr Gibson

39. Are you prepared to give any examples?

(*Mr Byers*) No. We will all have our own, I think! Perhaps after the Committee I might draw your attention to one or two ideas but I think that is one of the great strengths of Foresight—that they have that facility. Some of them have done some very practical, very valuable work. If you look at the manufacturing panel, for example, the 20/20 vision of manufacturing is very significant, and also links in the way in which manufacturing can feed into the Science Base in the United Kingdom, supporting innovation and so on.

Dr Turner

40. But you do not have a formal programme to measure the cost-effectiveness and the success of Foresight programmes?

(*Mr Byers*) We obviously monitor the way in which Foresight operates but there are some ideas that we do not pick up and run with, so they might be seen to be a cost for no advantage but I do think, looking at it in the round, it is a programme which is worth supporting financially because the benefits we get outweigh those areas where perhaps we do not decide to support a particular recommendation or proposal.

Mr Taylor

41. For many years we have tried to increase the public understanding of science, or even the public appreciation of science to frustratingly little effect and it is now beginning to have a negative impact on government policy-making. We have seen what I call the Melchett effect where the courts came to a ludicrous decision on Lord Melchett's outrageous behaviour, and we have seen the public susceptibility

[**Mr Taylor** *Cont*]
to looking at non peer-reviewed science as if it was definitive earlier in the whole GM foods saga—and, increasingly, the public's understanding of risk. All of this means that we ought to increase public understanding of science but we have failed to do so despite a lot of hard work and goodwill. Is it something we should really spend a lot more money on and really get a grip of?

(*Mr Byers*) I think this is one of those areas where we all have a heavy responsibility. I am going to be making a speech on 20 March about how we can almost rebuild public confidence in science and the steps we need to take to do that but I think we have to be realistic ourselves that, because of these high profile incidents, whether over GM or BSE, the fact you then get a jury verdict as we did in the Greenpeace case is a sign that we are behind the game at the moment, and there is a huge task for government but also for those people who have a wider recognition—

42. Just interrupting, there is another area which is directly in your field of responsibility which is that of mobile telephone masts and understanding of that, because on the one hand with the 3G licences there need to be a lot more masts covering the country to provide an integrated network and, on the other hand, we are—or government is—thinking about planning permission even for masts up to 15 feet and certainly there is a lot of public concern because they do not want to hear all the evidence which is that there is no appreciable risk, which our committee reported on?

(*Mr Byers*) But we need to start off by acknowledging that there is a perception that there is a risk and we have to engage people in the arguments, and we should not just take it for granted that people are going to accept these things and that is the issue. I would guess most of us in our own constituencies have had people coming to us worried about masts going up and, very often in a rather insensitive way, they have discovered there is going to be a mast not very far from where they live, and there is responsibility on the Telecoms companies to engage people in discussions and dialogue. Already there are a number of areas where people are concerned. We are becoming more risk averse as a society and there is a danger that we are getting into this compensation and blame culture where the first resort is to go to law to stop something happening. If we do that, then we are going to deny a whole range of opportunities to our country, and we do have to explain to people why change is necessary and why, in the end, we can all benefit from change, and it should not be seen as a threat. That is a bigger argument but I think science and the public understanding of science is very important in that debate. What does worry me is that we are increasingly moving to a situation which is not helped by the media, who are inclined to stoke up fears and manipulate people's views on what are sensitive matters in a way which is not really based on a well thought out or logical position but is often based on prejudice. So there is a wider debate here that has to be held and I am very keen, as the Cabinet Minister with responsibility for science, to put on record the steps we need to take to restore public confidence because I do believe that, when we get behind the vocal minority and the true facts of the position, the vast majority of British people are prepared to recognise the importance of science and of progress, because that is part of our history going back generations. We can achieve that but we start off from the position of recognising that we have ground to make up and, if we are honest enough with ourselves to say: "We are behind at the moment and the public are concerned", then we can put steps in place to reassure them and restore the public confidence in science and the importance which science has given those objectives.

43. Given that positive statement and the size of the task, my earlier question was should this not have a fundamental review about the resources which are allocated to it by government, even if it is then devolved to excellent organisations like the British Association or Royal Society to carry through the projects?

(*Mr Byers*) I am not sure it is a funding issue, to be honest. I think it is an issue which in a sense, in terms of making the case, does not cost very much. I think we just need to engage in the debate.

Dr Turner

44. The public perception of science is, of course, of enormous concern. If, for instance, the animal rights lobby cannot be contained we could lose our entire pharmaceutical industry as far as R&D is concerned in this country now that people who work with animals are coming under so much attack. It would then be impossible, for instance, to exploit the fruits of the human genome work, to name but one. So it clearly is not money: I would agree with that, but it needs a very clear political impetus at Cabinet level, would you not agree, to get the message across? Would you agree that it needs somebody to take responsibility for it in Cabinet to drive, not so much understanding, but perception?

(*Mr Byers*) I accept that and I think that is something that I certainly intend to do and have been doing and why I want to make this speech on 20 March. It is a wider responsibility, however, and we all know the example recently of Huntingdon Life Sciences where it was their bankers who basically decided they were no longer going to be involved. We all have a responsibility here and, if the financial community walks away, then they have to recognise they have a responsibility as well so government can lead; and Huntingdon Life Sciences—Lord Sainsbury in particular—played a very valuable role in making sure in the end there was a funding package in place but I have to say I think those people involved in the bank concerned will not be able to look back with pride at the role that they played because they basically gave in to a bunch of terrorists—it is as simple as that—and we all know that, when you start doing that, it is a very slippery slope for all of us.

Dr Gibson

45. Let me just ask you about devolution and the problems that might arise from that—

(*Mr Byers*) Challenges, not problems!

46. You call them that; I think they are problems. How do you foresee any problems or challenges with devolution? Do you see groups having their own science programmes in Scotland and Wales? How do we keep it all together? How do we have a United Kingdom strategy for science in the case of devolution?

(*Mr Byers*) I have not seen any demand for that. I think there is a sense of coherence that comes from a United Kingdom wide approach to science and science policy and having a science strategy. My own view is that, providing we give a strong lead from Westminster and have a strategy that people can buy into and that means discussing with the devolved administrations what we are trying to do and achieve, then I cannot see the pressure developing for a separate approach in Scotland and Wales.

47. It has not happened yet but the Royal Society of Edinburgh, for example, has tried to evolve committees and structures and so on on an English model, if you like, and there is a little feeling there that Scottish science is the best. Have you heard that said before?

(*Mr Byers*) I have heard it said before—

48. But you have never believed it?

(*Mr Byers*) I believe it plays a very vital part in ensuring the success of science in the United Kingdom, and I think we should play to our strengths—the strengths in Scotland, England, Wales or Northern Ireland. I think we can achieve far more together if we have a United Kingdom wide science strategy than we would if we had a separate strategy for Wales, Scotland, Northern Ireland and England.

Dr Gibson: I think we agree.

Chairman

49. That is a good note to finish on. It is not very often that the Secretary of State for Trade and Industry comes before this Committee three times in a Parliament; I hope it reflects our desire to see you as well as your longevity in the job. We do thank you very much indeed for coming along; we had difficulty fixing this date and then, would you believe, the Budget comes along and we have to postpone the hour, but we have been very pleased to see you. I think this afternoon's session has been a model of friendly and constructive dialogue. We have not held back on the questions but I hope we have asked them in a civilised and courteous manner and you have been forthright in your answers but have given answers that have been truthful, honest and very helpful. In conclusion, therefore, may I thank you for coming, thank you for your help, and we are sure that together we will continue to look after the interests of science.

(*Mr Byers*) Thank you very much.

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